

WHAT IS CLAIMED IS:

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1. A vibration actuator comprising:
a magnetic circuit component having a gap on one side in a predetermined direction;
a coil arranged in said gap;
a supporting unit supporting said magnetic circuit component and said coil so that said magnetic circuit component and said coil are separately movable in said predetermined direction; and
a space defining member defining an accommodation space accommodating said magnetic circuit component and said coil, said space defining member having a sound release hole faced to the other side of said magnetic circuit component in said predetermined direction.

2. A vibration actuator as claimed in claim 1, wherein said sound release hole is formed by at least one through hole.

3. A vibration actuator as claimed in claim 2, wherein said at least one through hole has a shape of one selected from a circle, an ellipse, an elongated circle, a polygon, and a combination thereof.

4. A vibration actuator as claimed in claim 1, wherein said space defining member has a cover faced to the other side of said magnetic circuit component in said predetermined direction, said sound release hole being formed in said cover so that air damping effect is exhibited between said yoke and said cover.

5. A vibration actuator comprising:
a magnetic circuit component having a gap on one side in a predetermined direction;
a coil arranged in said gap;

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a supporting unit supporting said magnetic circuit component and said coil so that said magnetic circuit component and said coil are separately movable in said predetermined direction; and

a space defining member defining an accommodation space accommodating said magnetic circuit component and said coil, said space defining member having a sound release hole faced to the other side of said magnetic circuit component in said predetermined direction, said magnetic circuit component cooperating with said space defining member to define a damper space arranged between said magnetic circuit component and said cover and communicating with said sound release hole.

6. A vibration actuator comprising:

a magnetic circuit component having a gap on one side in a predetermined direction;

a coil arranged in said gap;

a supporting unit supporting said magnetic circuit component and said coil so that said magnetic circuit component and said coil are separately movable in said predetermined direction; and

a space defining member defining an accommodation space accommodating said magnetic circuit component and said coil, said space defining member having a sound release hole faced to the other side of said magnetic circuit component in said predetermined direction, said magnetic circuit component cooperating with said space defining member to define a damper space arranged between said magnetic circuit component and said cover and communicating with said sound release hole, said sound release hole having an area corresponding to about 1.3 to 3.5% of an area of said cover.

7. A vibration actuator as claimed in claim 1, wherein said space defining member has a vibration transmitting portion to which said supporting unit is fixed.

8. A vibration actuator as claimed in claim 7, wherein said supporting unit comprises a helical leaf spring through which said magnetic circuit component is supported on said vibration transmitting portion.

9. A vibration actuator as claimed in claim 7, wherein said supporting unit comprises a vibration member through which said coil is supported on said vibration transmitting portion.

10. A vibration actuator as claimed in claim 9, wherein said vibration member has a flat shape, a saucer shape, a curved shape, a corrugated shape, or a combination thereof.

11. A vibration actuator as claimed in claim 9, wherein said vibration member is made of at least one kind of plastic film material selected from polyether imide, polyethylene terephthalate, polycarbonate, polyphenylenesulfide, polyarylate, polyimide, and aramide.

12. A vibration actuator as claimed in claim 9, wherein said vibration member is faced to a plurality of surfaces of said coil and adhered to these surfaces by an adhesive.

13. A vibration actuator as claimed in claim 1, wherein said sound release hole serves to exhibit vibration attenuating function utilizing air viscosity.